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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/780,341 | 02/17/2004 | Kurt A. Carlsen | BUR920000061US1 | 9961 |

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EXAMINER

SELLMAN, CACHET I

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1762

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/780,341 | CARLSEN, KURT A. | |
| | Examiner | Art Unit | |
| | Cachet I. Sellman | 1762 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-14 and 19-25 is/are pending in the application.
- 4a) Of the above claim(s) 11-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2/17/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 11-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on February 17, 2004.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

- In Figure 2 reference character "34" is not defined in the specification.
- In Figure 2 reference character "3" is not defined in the specification.
- In Figure 4 reference characters "5" and "6" are not defined in the specification

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be

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notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 19 – 20 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Aitchison (US 5928426).

Aitchison discloses a method for scrubbing exhaust gas of a manufacturing process where the gas consist of a first and second chemical component (abstract) and column 5, lines 22-33) by flowing the exhaust gas through an enclosure defining a chamber and containing at least one substrate (column 2, lines 35-41; column 4, lines 31-56 and Figure 2) then causing the first chemical component to be chemical vapor deposited onto at least one substrate (column 2, lines 33-52 and column 5, lines 27-33) as required by **claim 19**. Aitchison teaches removing the active gas species in an exhaust gas as the gas travels along a plate the species (i.e. Tungsten and hydrogen) are removed where the tungsten is removed first (having the highest concentration at the end of the plate) and the other active species, hydrogen, is removed thereafter (column 5, lines 26-33 and column 6, lines 8-16) as required by **claim 20**. Aitchison further discloses removing at least one substrate from the enclosure and cleaning the substrate

of any film deposited; installing the substrate in the enclosure and causing the chemical component to be chemical vapor deposited on the substrate (column 8, lines 1-11 and column 11, lines 1-18) as required by **claim 25**.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aitchison.

The teachings of Aitchison as applied to claim 19 are as stated above.

Aitchison does not teach heating the substrate to a temperature of at least 800°C or 1100°C as required by claims **21 and 22**.

Aitchison discloses that the process can be used for any exhaust gas that contains gas species that can be thermally treated. Aitchison further discloses that in order to promote a high temperature chemical vapor deposition reaction the temperature of the plates (substrate) must be maintained above the minimum temperature required to initiate the HTCVD reaction and heated so if there is any non

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uniformity in temperature across the plates, the minimum temperature is greater than the minimum temperature to initiate the HTCVD reaction (column 5, lines 49-58). It would have been obvious to one having ordinary skill in the art at the time the invention was made to heat the substrate in the claimed temperature range through routine experimentation depending on the gas species within the exhaust gas. One would have been motivated to do so because Aitchison teaches that the temperature at which the plates are heated depends on the gas species and should be high enough to promote the chemical vapor deposition onto the substrate.

7. Claims 19, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor (US 5945078) in view of Aitchison (US 5928426)

The teachings of Aitchison as applied to claim 19 are as stated above.

Aitchison does not teach the use of a non-toxic first chemical component such as silicon and a toxic second component such as arsenic as required by claims 23 and 24.

Taylor disclose that a large quantity of noxious substances are employed in the semiconductor industry which include silane and arsine and Taylor further states that these gases are commonly pyrophoric and toxic and that their uncontrolled release can lead to a number of problems such as fire hazards and corrosion of processing

apparatus therefore it is important to remove these species from the exhaust gas (column 1, lines 9-20).

Taylor does not teach flowing the exhaust gas through an enclosure defining a chamber and containing at least one substrate and causing the first chemical component to be chemical vapor deposited onto the substrate as required by **claim 19**.

Aitchison teaches a process for scrubbing an exhaust gas that comprises the steps of flowing the exhaust gas through an enclosure defining a chamber containing at least one substrate and causing the first chemical component to be chemical vapor deposited onto said substrate. Aitchison discloses that this process is cost effective and operates well in its intended environment and has an extended lifetime unlike a wet scrubbing process which is expensive to operate and maintain (column 1, lines 39-48 and column 2, lines 22-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the process taught by Aitchison to remove silane and arsine from exhaust gas of Taylor. One would have been motivated to do so because Aitchison teaches that the process can be used to remove species from exhaust gas from a semiconductor process, that a gas containing silicon and arsenic can be treated using this process (column 13, lines 18-30) and that the process is cost effective and Taylor teaches that particular hydrides such as silane and arsine are commonly used in a

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semiconductor process and it is important to remove them from the exhaust gas due to hazards therefore one would have a reasonable expectation of success in removing the silicon and arsenic from the exhaust gas.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cachet I. Sellman whose telephone number is 571-272-0691. The examiner can normally be reached on Monday through Friday, 7:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER

Cachet Sellman
Patent Examiner
Art Unit 1762